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DIRECTORATE OF INTELLIGENCE

23 July 1986

India: Space Satellite Options [redacted] 25X1

Summary

India is looking to Arianespace to launch its INSAT-IC satellite following the postponed September launch on the Space Shuttle and the US refusal to make available an expendable launch vehicle. Few options exist for India if its current satellite, INSAT-1B, fails before a replacement can be put in orbit. The INSAT satellite is crucial to India's broadcast television, communications, and weather forecasting systems and serves as a symbol of New Delhi's great power aspirations. New Delhi would have to consider stop-gap options for the three functions (communications, television, and meteorological) performed by the INSAT satellites--with the communications function being the most easily replaced. The US decision to offer the expendable launch vehicle option to Indonesia ahead of India will reinforce longstanding Indian perceptions of the United States as an unreliable partner, a perception Washington could combat by compensating New Delhi in other areas of technological cooperation. [redacted] 25X1

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The INSAT Program

New Delhi is trying to keep its INSAT satellite program on track. The program has been set back by Washington's indefinite postponement of a September 1986 launch of India's third satellite--INSAT-1C--by an Indian payload specialist on the Space Shuttle and the recent US decision to deny India the one slot available on an early Delta expendable launch vehicle in favor of Indonesia. The Indians want to orbit INSAT-1C as soon as possible to provide a backup in case the orbiting INSAT-1B fails and to increase their telecommunications and weather forecasting capabilities. Because India's first INSAT satellite failed in orbit in 1982, the program--designed to be a two-satellite system--is not fully operational. [redacted] 25X1

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The INSAT-1 series of satellites is unique because they combine television broadcasting to remote stations, telecommunications relay, and meteorological functions. Designed by US and Indian engineers, the satellites were an outgrowth of the NASA-Indian Space Research Organization's SITE project in the 1970s, which demonstrated the feasibility of a nationwide television system without a landbased network. India's television broadcasting system is completely dependent on the INSAT satellites for national coverage. The satellites also provide telecommunications services and weather imagery unavailable from Soviet or Western satellites to Indian civilian and military customers. [redacted] 25X1

The INSAT program has important domestic and international political dimensions for New Delhi. The ruling Congress party has used the television broadcasting capabilities to reach India's linguistically and geographically diverse population. After Indira Gandhi's assassination in 1984, for example, pictures of Rajiv Gandhi at the funeral and swearing in as Prime Minister were an important element in the smooth transition and restoration of civil order. Indian political and scientific officials also have publically acclaimed the INSAT program as a major development project leading India into the 21st century. We believe they view the INSAT satellites as a stepping-stone toward an ambitious civil and military space program. [redacted] 25X1

INSAT-1C Launch Alternatives

India most likely will use a West European Ariane rocket to launch INSAT-1C. An Arianespace team visited New Delhi in early July to offer a launch schedule for early 1988 and to explain the cause of the Ariane launch failure in May. [redacted] 25X1

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If the Ariane deal falls through and a US launch vehicle is unavailable, **we doubt the Indians would approach the Soviets.** We believe the Indians probably calculate that, because INSAT-1C was built in the US, Washington will not waive COCOM restrictions and grant an license to export the satellite to the USSR. The Soviets have launched Indian remote sensing satellites; another launch is pending using a Soviet vehicle. India will pay for this launch, but unlike three previous occasions when the Soviets provided free launch services, we do not believe it sets a precedent for a Soviet commercial launch of INSAT satellites. [redacted] 25X1

The Indians are not considering using Chinese launch services, [redacted] 25X1
[redacted] Beijing has explored establishing a joint commercial launch service 25X1
with Western firms and has declared a willingness to launch foreign satellites on its CZ-3 vehicle. We doubt the Indians would pursue this option. New Delhi would be reluctant to give Beijing--which it views as its long term Asian rival--the propaganda advantage associated with the launch. [redacted] 25X1

We have no evidence that the Indians have thought of **asking the Japanese to launch INSAT-1C.** The Japanese H-1, which is scheduled to fly for the first time in August, uses a US-built first stage rocket and could put the satellite in orbit. Tokyo, however, would need the US to waive a prohibition against using this rocket to launch non-Japanese owned satellites. [redacted] 25X1

INSAT-1C Satellite Alternatives

No single satellite could replace the INSAT-1B's combination of high-powered television broadcasting, telecommunications relay, and meteorological functions in the event either the INSAT-1C launch or the orbiting INSAT-1B fails. New Delhi could take stop-gap measures to restore each of the three functions of its orbiting satellite. [redacted]

The telecommunications relay function of INSAT-1B is readily replaceable by substitute satellites. India could negotiate with INTELSAT to lease unused transponders on the Indian Ocean INTELSAT-4A or INTELSAT-5 satellites to handle India's telecommunications traffic. Following the April 1982 failure of the Indian INSAT-1A satellite, New Delhi used both INTELSAT and Soviet satellites as substitutes for relaying telephone traffic. Because India found its leasing arrangement with the Soviet Union unsatisfactory, we doubt New Delhi would turn quickly again to the Soviets for help. [redacted] 25X1 25X1

New Delhi could also replace the telecommunications function by purchasing or leasing transponder space on the Canadian Anik C-1 or Anik D-2 satellites. The Canadians are interested in selling or leasing transponders on both satellites launched in 1984. Telesat Canada recently offered a 75 percent reduction in the price for leasing transponders. The Aniks have a seven-year design lifetime, but we expect that the lifetime would be reduced to five years with the expenditure of fuel required to move the Anik to a position over the Indian Ocean. [redacted] 25X1

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The meteorological functions of INSAT-1B will be harder to replace using alternative satellites. No geosynchronous meteorological satellites in their current orbits could fully compensate for the loss of the INSAT-1B imaging system. Weather forecasting in India requires that the entire subcontinent and surrounding waters be seen. The Japanese Himawari-3, which images the eastern half of the subcontinent, would only permit monitoring of typhoons in the Bay of Bengal. [redacted] 25X1

The Western European Meteosat 1-F2 could perform INSAT-1B's weather forecasting functions if it were moved to a location suitable for imaging India. The European Meteorological Satellite Organization may be willing to move Meteosat 1-F2 for India by mid-1987 if Ariane successfully launches a new Meteosat. [redacted] 25X1

New Delhi might also consider using the imagery from either US or Soviet low-altitude polar orbiting weather satellites as a substitute for INSAT-1B meteorological functions. The absence of a wide field of view in the cameras, however, would degrade India's ability to identify typhoons sufficiently far from land to provide adequate emergency warnings. [redacted] 25X1

New Delhi has **only one option for replacing the television broadcast function** of the INSAT-1B. India could lease another nation's existing satellite system, but that option would require India to reconfigure its S-band (2.5 GHz) television-receive-only ground stations to receive in the C-band (6/4 GHz) or Ku-band (14/11 GHz) used by the rest of the world's television broadcasting satellites. The reconfiguration would cost at least $50 million and substantial time--one day for a technical team at each of 160 ground stations. [redacted] 25X1

Implications for Indo-US Relations

We expect New Delhi to try to keep its communications satellite program as close to schedule as possible. An Indian decision to opt for an Ariane launch of their satellite is unlikely to impair relations between NASA and the Indian Space Research Organization. **India recognizes the difficulties NASA faces** in rescheduling the INSAT-1C launch. [redacted] 25X1

New Delhi is likely to keep its payload specialist on standby for a future shuttle flight--perhaps to launch the INSAT-1D satellite scheduled to be ready in 1989. [redacted] 25X1

If Washington cannot meet India's expectations, New Delhi would probably turn to Arianespace to launch INSAT-1D and possibly future Indian satellites. [redacted] 25X1

Moreover, an Ariane launch may indirectly benefit Indo-US relations by keeping Rajiv Gandhi's high-tech agenda on track and eliminating the possibility that a failure of Indian television, telecommunications, and weather forecasting would somehow be blamed on the US. If Ariane runs into difficulty, the US has the option of waiving its

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restrictions on a Japanese launch to demonstrate its willingness to help New Delhi. [redacted] 25X1

The recent US decision to offer the expendable launch vehicle option to Indonesia, however, ahead of India will **reinforce longstanding Indian worries about US reliability** as a source of sophisticated technology and as a friend. Gandhi may look to the United States for additional initiatives in the areas of computers or telecommunications technology that will help him deflect domestic criticism of his turn toward the West--and the United States in particular. [redacted] 25X1

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